A NEW CRAWFISH OF THE GENUS *PROCAMBARUS* FROM MISSISSIPPI (DECAPODA, ASTACIDAE)

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ABSTRACT

A new crawfish species of the Spiculifer Group, Blandingii Section, of the genus *Procambarus* is described from tributaries of the Tombigbee River in eastern Mississippi. *P.* **lagniappe**, new species, is related to *P. penni* and *P. spiculifer*.

The first specimens of the species described here were collected on June 16, 1955 by the late George H. Penn and me from two creeks in Kemper Co., Mississippi (Tombigbee River drainage). Dr. Penn first identified these specimens as *Procambarus penni* Hobbs (1951:273). Later he changed the labels to read "atypical *P. versutus*" (Hagen, 1870:51). In August, 1965, I collected in this area again, finding additional similar specimens recognizing them as an undescribed species.

This species belongs to the Spiculifer Group of the Blandingii Section of the genus *Procambarus* and is the fourth species, to date, of this group to be recorded from Mississippi. Other species are *P. penni* from the Pearl and Pascagoula River drainages, *P. ablusus* Penn (1963:121) from the Hatchie River drainage, and *P. vioscai* Penn (1946:27) from the Pearl, Amite, Tangipahoa, Homochitto, Big Black, Yazoo, Wolf, and Tombigbee River drainages.

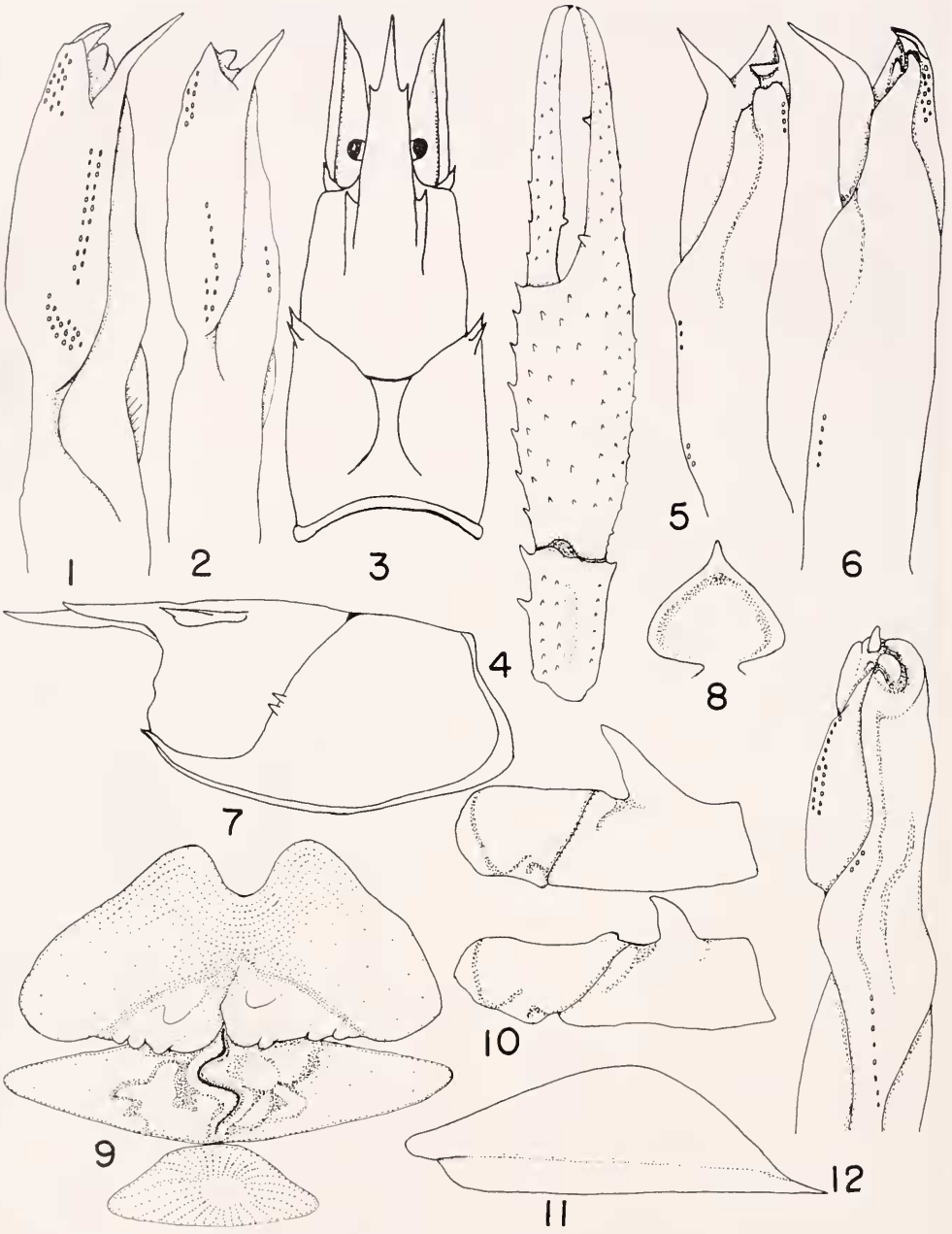
I wish to express my gratitude to Dr. Horton H. Hobbs, Jr., Senior Zoologist, Smithsonian Institution, for examination of specimens and confirmation of identification. Thanks are also due Dr. Alfred E. Smalley, Tulane University for the loan of specimens of this species from the Tulane University collections.

Procambarus **lagniappe**,[1] new species

Diagnosis.—Body pigmented; eyes normal. Rostrum with prominent marginal spines; acumen attenuate, constituting 43.3-44.5 per cent of total length of rostrum; postorbital ridges terminating in spines; suborbital angle much reduced; lateral surface of carapace with two cervical spines. Areola 5.0-6.2 times longer than wide, constituting 25.3-27.7 per cent of entire length of carapace. Simple hooks present on ischiopodites of third and fourth pereiopods; basipodites of fourth pereiopods bear an opposable tubercle on cephalic surface. First pleopod of first form male (Figs. 1, 6, 12) without shoulder on cephalic margin, terminating distally in three distinct elements; mesial process subspiculiform and directed caudodistally with only tip corneous; cephalic process lacking; caudal process represented by low hemi-disc arising from much reduced caudal knob; central projection corneous, subacute, extending caudodistad at about 60 degree angle to axis of pleopod shaft; fusion lines of its component elements clearly marked. Annulus ventralis as figured (Fig. 9).

Holotypic male, Form I.—Carapace (Figs. 3, 7) subovate, slightly compressed laterally; abdomen slightly longer than carapace (39.0 and 38.2 mm, respectively). Maximum height of carapace slightly more than maximum width (16.8, 15.4 mm). Areola relatively broad and short (constituting 25.6 per cent of entire length of carapace), about

[1] Creole French: in Louisiana, a little something extra given to customers by tradesmen.



Figures 1-12. *Procambarus lagniappe*, new species; 1. Mesial view of first pleopod of holotype; 2. Mesial view of first pleopod of morphotype; 3. Dorsal view of carapace of holotype; 4. Upper view of carpus and chela of holotype; 5. Lateral view of first pleopod of morphotype; 6. Lateral view of first pleopod of holotype; 7. Lateral view of carapace of holotype; 8. Epistome of holotype; 9. Annulus ventralis of allotype; 10. Basipodites and ischiopodites of third (upper) and fourth (lower) pereiopods of holotype; 11. Antennal scale of holotype; 12. Caudal view of first pleopod of holotype (pubescence removed from all structures illustrated).

five times as long as wide, with five fine punctations in narrowest part. Cephalic portion of carapace nearly three times as long as areola. Rostrum long, acumen extending cephalad beyond peduncle of antennule, excavate; with acute marginal spines. Rostrum widest at base, margins elevated and converging anteriorly; no median carina. Acumen long and thin. Postorbital ridges well developed, each terminating cephalad in acute spine; punctations along mesial surfaces of ridges, tubercles along lateral surfaces. Brachiostegal spine well developed. Suborbital angle much reduced. Cervical groove interrupted on each side by two conspicuous acute spines. Upper two-thirds of carapace punctate, lower one-third strongly granulate.

Epistome (Fig. 8) with raised lateral margins converging toward small cephalomedian spine. Cephalic section of telson with three spines in each corner.

Antennules of usual form, with prominent acute spine on ventral side of basal segment. Antennae not quite reaching tip of abdomen. Antennal scale (Fig. 11) long, tip extending beyond tip of acumen, widest slightly proximal of midlength, outer distal margin with strong spine.

Chela (Fig. 4) ovoid in cross-section, long, slender; single row of seven tubercles along inner margin of palm; smaller tubercles in six irregular longitudinal rows on upper surface of palm. Both fingers terminating in short, corneous tips bent toward each other. Movable finger with one prominent tooth on opposable margin near base. Immovable finger with two prominent, widely spaced teeth on opposable margin. Fingers long; dactyl about 53 per cent of total length of outer margin of chela. Carpus (Fig. 4) ovoid in cross-section; with two prominent, acute tubercles in distal half of inner margin; few squamous tubercles arranged in two rows between inner margin and longitudinal groove. Basipodite of first pereiopod without spines. Ischiopodites of first pereiopods each with four spines on inner margin.

Hooks on ischiopodites (Fig. 10) of third and fourth pereiopods simple, subequal in length; basipodites of fourth pereiopods each bearing small tubercle on distal cephalic surface opposite hook. Apophyses on coxopodites of fourth and fifth pereiopods with caudomesial projections; that on fourth knoblike, that on fifth compressed and acute.

First pleopod (Figs. 1, 6, 12) extending to middle of coxopodite of third pereiopod when abdomen flexed. Pleopod essentially straight; terminating in three distinct elements; mesial process subspiculiform and directed caudodistally at about 55 degree angle to axis of main shaft, tip corneous; cephalic process lacking; caudal process low, flattened corneous hemi-disc; caudal knob low, reduced; central projection corneous, subacute, extending caudodistad at 60 degree angle to axis of main shaft, fusion lines of component parts clearly defined. Pleopods asymmetrical with base of left displaced in plane posterior to right.

Allotypic female.—Differs from holotype in following respects: rostrum more slender, acumen proportionately longer; areola proportionately narrower; rostrum widest slightly cephalad of base; tip of antennal scale reaching tip of acumen; chela proportionately wider, thicker; antennae extend caudad to middle of fifth abdominal segment. Annulus ventralis (Fig. 9) movable; spindle-shaped, widest in transverse axis; cephalic margin partially obscured by several tuberculate prominences extending caudad from sternum immediately cephalic to it; sinus originating near midcephalic margin and forming sinuous line to near midcaudal margin of annulus. Area adjacent to sinus raised, smooth.

Morphotypic male, Form II.—Differs from holotype in following respects; carapace less compressed laterally; height and width of carapace subequal; areola proportionately wider (4.5 times as long as wide); antennae extending caudad to caudal margin of telson; chela and hooks on ischiopodites reduced; caudomesial processes on coxopodites of fourth and fifth pereiopods less well developed; ischiopodites of each first pereiopod with three spines. First pleopods (Figs. 2, 5) asymmetrical, right pleopod reaching almost to anterior edge of coxopodite of third pereiopod when abdomen flexed, left displaced posteriorly reaching to middle of coxa of third pereiopod. All terminal elements present but less acute and noncorneous; caudal knob more prominent.

Type Locality.—Pawticfaw Creek (tributary to Sucarnoochee Creek, in turn a tributary of Tombigbee River) 6.0 miles south of DeKalb, Kemper County, Mississippi, at

Measurements (in mm).—

	Holotype	Allotype	Morphotype
Carapace:			
length	38.2	48.0	34.8
width (max.)	15.4	19.6	14.5
height (max.)	16.8	20.6	14.5
Abdomen length	39.0	49.7	36.5
Areola:			
length	9.8	12.5	9.0
width (min.)	1.8	2.0	1.8
Rostrum:			
length	14.8	19.0	13.3
width	5.2	6.8	4.9
length of acumen	6.6	9.1	6.1
Antennal scale:			
length	13.3	15.5	11.5
width	4.1	5.0	3.8
First pleopod length	9.5	--	7.9
Right chela:			
length, outer margin	30.3	31.5	21.0
length, dactyl	15.8	16.8	11.8
width, palm	7.4	8.9	5.1
thickness of palm (max.)	5.6	6.2	3.5

Mississippi Highway 39. Here the stream varies in width from 10 to 30 feet, with a bottom of white sand and plant debris. The water is clear, with good current, suggestive of a spring-fed stream. Other crawfishes present include an unidentified species of *Orconectes* (no first form males collected), which was predominant and was only found in piles of plant debris. All specimens of *P. lagniappe* were taken from scattered growths of *Vallisneria* in the swifter parts of the stream.

Disposition of types.—The holotypic male, Form I, the allotypic female and the morphotypic male, Form II, all from the type locality, are deposited in the United States National Museum (nos. 119088, 119089, 119090, respectively). The following paratypes are retained in my personal collection at McNeese State College: JBB 108 (type locality)—one ♂ I, five ♂♂ II, two ♀♀; JBB 206 (type locality)—one ♂ II. Paratypes in the Tulane University Collections are: TU 3174, Blackwater Creek, 7.8 miles south of DeKalb—one ♂ I, three ♀♀, GHP and JBB coll.; TU 3613 (type locality)—one ♂ I, one ♂ II, one ♀, JBB coll.

Color notes.—Background color of most of the dorsal part of the carapace is medium brown. The sides of the cephalic and thoracic region are marked by an incomplete (in the mid-dorsal area of the areola) U-shaped yoke of olive brown. The yoke increases in width caudally and is widest at caudal edge of carapace where the base of the U almost meets in the median line. A large cream colored area is below the "yoke" on the cephalic portion, which area darkens to light olive-tan on the thoracic portion of the carapace. The mid-dorsal portion of the abdomen is marked by a lightly-defined stripe of medium brown. On either side of this stripe, the background color is cream. The caudal portion of each abdominal segment is deep olive brown. A deep, olive brown, lateral "V" connects the caudal portions of adjacent segments. A pair of small, rectangular, deep olive brown blotches mark the cephalolateral portion of each segment. Between the transverse caudal stripes and above the "V" on either side is a rust-colored blotch on the second through fifth abdominal segments. The cephalic section of the telson is marked by an inverted cream colored crescent surrounded by olive brown, the caudal section is uniformly medium brown. The bases of the uropods are cream, with mesial rectangular stripes of dark brown surrounded by a large area of rust brown. The palms of the chelae are medium brown with dark olive brown tubercles. The dactyl and immovable finger are dark olive brown, except for cream colored tips.

Variations.—There are few variations of import in observed specimens. The annuli ventrales of smaller adult females are significantly different. Smaller females do not possess tuberculate prominences on the sternum just cephalic to the annulus ventralis. Also the median sinus on the annulus ventralis of smaller females is less deeply sculptured and shows less lateral twisting.

Relationships.—On the basis of the structures of the first pleopod of Form I males, *P. lagniappe* is most closely related to *P. spiculifer* (LeConte, 1856:401), resembling it in lacking a distinct cephalic process, but differing from it in having a much reduced caudal knob. This resemblance may be more superficial than actual. Geographically, its closest Spiculifer Group relative is *P. penni* Hobbs (1951:273). Second form males show a closer resemblance to *P. penni* than

to *P. spiculifer;* also the annuli ventrales of females of *P. penni* and *P. lagniappe* are markedly similar.

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